

## ABSTRACT OF THE DISCLOSURE

[0048] A portable survey instrument and methodology yield intensity of neutron radiation, intensity of gamma radiation, and a direction of impinging gamma radiation. The instrument uses a neutron detector surrounded by an essentially rectangular moderator with preferably four gamma ray detectors disposed symmetrically about the neutron detector and within the moderator. Material and dimensions of the moderator are selected so that the neutron measurement is equally sensitive to fast and thermal neutrons. The moderator also induces angular responses to the gamma ray detectors. Responses of the gamma ray detectors are combined to yield a parameter indicative of the angular position of a source. The survey instrument is portable and suited for hand held use.